# Systems Engineering Management Plan (SEMP) Checklist*

The Systems Engineering Management Plan (SEMP) is the primary, top level technical management document for the integration of all engineering activities within the context of, and as an expansion of, the project plan. A SEMP should be prepared for each project and regularly updated as development progresses.

The SEMP is not necessarily a long document. For some projects, it could be a page long, for others it could be hundreds of pages long. The plan needs to be specific to the needs of that project. It needs to be a "living" document, updated as often as needed as new information becomes available. It is often best if the SEMP references existing organizational policies and procedures. There is no need to duplicate what already exists.

## SEMP Contents

The contents of the SEMP are described in EIA 632† [and IEEE P1220] and may include three parts ... as follows:

- Part I, Technical Program Planning and Control, describes the proposed process for planning and control of the engineering efforts for the system's design, development, test and evaluation
- Part II, Systems Engineering Process, includes specific tailoring of the SE process as described in this book, implementation procedures, try trade study methodology, types of models to be used for system and cost effectiveness evaluations, generation of applicable documentation and specifications.
- Part III, Engineering Specialty Integration, describes the integration of technical discipline efforts and parameters into the SE process and includes a summary of each technical discipline effort with a cross reference to the specific plan.

The SEMP forms the foundation for all engineering activities during the entire project and is the means for documenting the tailored SE approach to be used for a specific project. The development of the SEMP is a systems engineering management responsibility, but it must reflect the combined, coordinated inputs of the Project Manager and all other participants in the project.

## SEMP Checklist

A comprehensive and well-thought-out SEMP is the key element in the planning of the systems engineering process. The SEMP should address the following questions:

***Problem***

1) What is the problem we're trying to solve?
2) What are the influencing factors?
3) What are the critical questions?
4) What are the overall project constraints in terms of cost, schedule, and technical performance?
5) How will we know when we have adequately defined the problem?

---

* Taken from : Martin, James, N., (1997), Systems Engineering Guidebook: A Process for Developing Systems and Products, *CRC Systems Engineering Series*, Boca Raton, FL: CRC Press, pp. 80-83.

† The SEMP described in EIA 632 [and IEEE P1220] no longer has 3 parts, but the contents are essentially the same with more emphasis place don multi-discipline teams and technology transition.

6) How will we know when we have adequately solved the problem?

7) Who are the customers?

8) Who are the users?

9) What are the customer and user priorities?

10) What is the relationship to other projects?

***People***

1) How are we going to structure the project to enable this problem to be solved on schedule and within cost?

2) What does systems engineering management bring to the table?

3) How will we integrate the various disciplines?

4) What special knowledge, skills, and abilities will be required?

5) What training is needed?

***Information***

1) What metrics will be used to measure technical progress?

2) What metrics will be used to identify process improvement opportunities?

3) How will we measure progress against the plans and schedules?

4) How often will progress be reported? reported by whom? to whom?

5) How will we assess risk? what thresholds do we need for triggering mitigation activities? how will we integrate risk management into the technical decision process?

6) How will we communicate across and outside the project?

7) How will we record decisions? where?

8) How can we incorporate lessons learned from other projects?

***Process***

1) What is our systems engineering process for this project?

2) What are the methods that we will apply for each systems engineering task?

3) What are the tools we will use to support these methods? how will the tools be integrated?

4) How will we control configuration development?

5) How/when will we conduct technical reviews?

6) How will we establish the need for and manage tradeoff studies?

7) Who has authorization for technical change control?

8) How will we manage requirements? interfaces? documentation?

***Technology***

1) How and when will we insert new or special technology into the project?

2) What is our relationship to research and development labs? how will they support us? how will we incorporate their results?

3) How will we incorporate system elements provided by the customer or user? how will we certify the adequacy of these items?

4) What facilities are required?

5) When/how will we transition to Production?

6) When/how will we transition to Product Support?